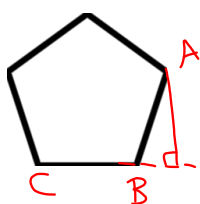
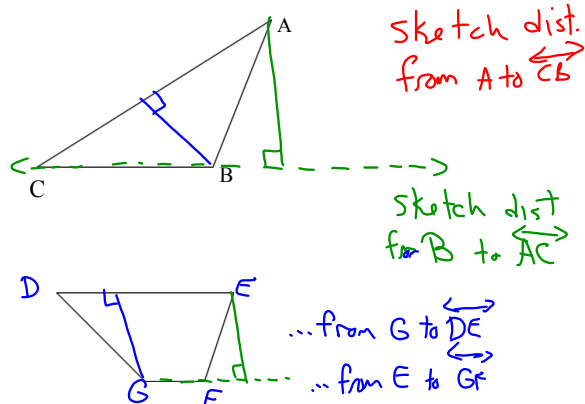
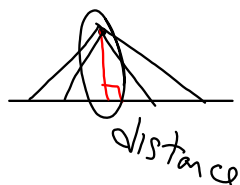


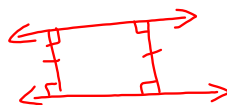
3-6 Perpendiculars and Distance

Distance between a point and a line--is the length of a perpendicular segment to the line.



dist. from A to \overleftrightarrow{BC}

Distance between parallel lines--Two lines are \parallel if they are equidistant to each other.



Theorem 3.9--In a plane, if 2 lines are each equidistant from a 3rd line, then the 2 lines are parallel to each other.

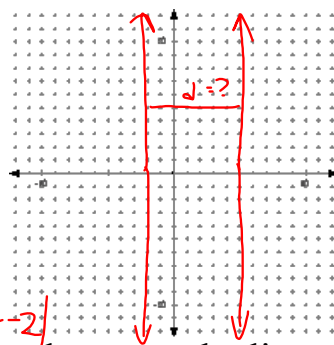
Examples

$$x = 5$$

$$x = -2$$

$$d = 7 \quad |5 - (-2)|$$

Find distance between the lines.

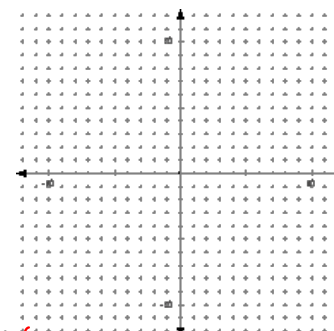
Examples

$$y = 3$$

$$y = 8$$

Find distance.

$$d = 5 \quad |8 - 3|$$



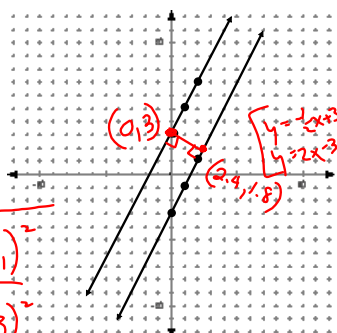
If both lines are not horizontal or vertical, it gets complicated.

$$y = 2x + 3$$

$$y = 2x - 3$$

Find Distance.

$$\begin{aligned} d &= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \\ &= \sqrt{(2.4 - 0)^2 + (1.8 - 3)^2} \\ &= \sqrt{7.2} \approx 2.68 \text{ units} \end{aligned}$$



HW

p162-163

11-15, 17-20, 32a, b

For #s 17 and 18:

Draw in the distance, but do not find.